# BELL LABORATORIES RECORD

INDEX

VOLUME 30 January 1952 to December 1952

### **Bell Laboratories Record**

#### Editor Philip C. Jones

Associate Editor JULIAN D. TEBO Production Editor
R. Linsley Shepherd

## Circulation Theodore N. Pope

Bell Telephone Laboratories, Incorporated 463 West Street, New York 14, N. Y.

#### LIST OF ISSUES IN VOLUME 30

No.	1	January .										P	age	S	1- 48
64	2	February	14			,									49-100
44	3	March .				,	,	•							101-152
41	4	April		,											153-204
**	5	May									,	,			205-236
66	6	June			,								,		237-276
*4	7	July						,					*		277-312
**	8	August .	,	÷	,	*									313-344
ex	9	September								,					345-380
**	10	October .							*	,			*		381-412
66	11	November													413-448
**	12	December													449 488

## Index to Authors, Volume 30

A

ACHENBACH, C. H	Improving the Service Life of Storage Batteries	313
	В	
BACHELET, A. E	Sequence Signaling	464
BLOUNT, F. E.	An Automatic Dial Pulse Recorder	440
BONORDEN, A. R.	A Test Unit for AMA Perforators and Readers	398
BOWKER, M. W.	Finding Gas Leaks in Cable Sheaths	359
DOWNER, M. W	Timuling Gas Leaves in Cable Sileatis	300
	C	
CIOFFI, P. P	A Recording Fluxmeter of High Accuracy and Sensitivity	247
Совв, L. J.	Handset for the 500-Type Set	317
COLE, I. É.	Magnetic Tape Editor	420
	D	
DEHN, J. W	. Code Patterns in Telephone Switching and Accounting Systems .	9
Drew, G. G	The AMA Assembler	227
	F	
For M F	Vibrallan A Nam Farmana and Allan	345
FINE, M. E	Vibralloy—A New Ferromagnetic Alloy  Optical Microscopy: An Adjunct to Engineering and Research	253
POSIER, P. G	Optical Microscopy: An Adjunct to Engineering and Research .	200
	G	
GARVIN, J. S	A New Stepping Relay	14
GAY, R. R	Power Plants for the TD-2 Radio Relay System	118
GERMANTON, C. E	Handling Coin Calls in No. 5 Crossbar	430
GOHN, G. R	High Speed Machine for Fatigue Studies	459
GRIFFIN, J. P	. High Stability 100-KC Crystal Units for Frequency Standards .	433
	Н	
HAGUE, A. E	The AMA Computer	289
HANNAY, N. B.	The Mass Spectrometer	64
Hawks, V. J	The Channel Unit of the N1 Carrier	381
HEIDENREICH, R. D.	Electron Metallography	101
HILL, R. B.	Birth of the Loading Coil	263
HUSTA, P	. An Improved Shadowgraph	223
	1	
ILGENFRITZ, L. M	. Key West-Havana Cable: Electrical Characteristics of	
Thousand the same of the same	Repeaters and Terminals	20
INGRAM, S. B	Communications Development Training Program	404
	J	
JACOBS, O. B	The Key West Hayana Cable, Transmission Assests	115
	Tracing Time Backward in AMA	. 115
JOEL, A. E., JR JORDAN, W. C	Tracing Time Backward in AMA	422
JORDAN, W. C	. The AMA Timer	122
Volume 30, 1952		[3]

#### K

KERSTA, L. G	. Solid Sound					354
KILLE, L. A	. Test Tapes for Automatic Accounting Centers					349
			,			
King, G. V.	cent and a n					471
Кисн, F. С	. The AMA Reader			*		237
	L					
Lawrence C C	IVT An All Durnosa Station Wise					295
Lawson, C. C.	. JKT-An All-Purpose Station Wire					
LINCE, A. H	. Antennas for the TD-2		*			49
	M					
Margarett W. F.	Provided Assessment of Tall Line Deless					205
MALONEY, M. E	Recorded Announcement of Toll Line Delays					365
	The AMA Printer		*			368
MESZAR, JOHN .	Basic Features of the AMA Center		*			70
MESZAROS, G. W.	The Key West-Havana Cable: Regulated DC Power St	app	ly			217
MILLARD, A. C.						110
MILLMAN, S						413
MILLMAN, S				*	*	410
	0					
O'BRIEN, L. A	"Packaged" Dial Office for Small Communities					106
	P					
D 1 I	Line Involution Testing					140
PAUER, J. J.	Line Insulation Testing				*	449
Prescott, R. E						211
Pullis, G. A	Alarm and Control Features of the TD-2		*			477
	R					
REES, J. B	Old-Fashioned Virtues in the Telephone Business Tod	21				84
						456
	Recovery and Repair of Telephone Apparatus					
RIGGS, GEORGE .	The AMA Summarizer					321
RITCHIE, D., JR	Improvements in Subscriber Line Testing					337
ROLF, F. N	The Sorter for Automatic Message Accounting					299
	S					
Consum I O	Simul Touristies in Housing					0
Scнотт, L. O	Signal Translation in Hearing					2
Sharpe, D. T	Cable Sheath Repairs				*	161
SHEATSLEY, P. W.	Central Office Equipment for AMA					173
SPENCER, H. H	Key West-Havana Cable: The Power Plant					166
	T					
T W T	•					227
TIERNEY, W. L.	Radio Relay Stations of the TD-2					327
TREPTOW, F. W	The 507A and 507B PBX			•	•	205
	V					
VAACE E. F.	Cable Transmission Characteristics for the N Carrie	r S	vste	m		333
VAN TASSEL, E. K.						
	W					=0
	The E1 Telephone Repeater				*	56
WILLIAMS, H. J.	Magnetic Domains					385
WINDELER, A. S						171
WOOLEY, M. C.						61
WORD, J. A	man a state of the					153
,	9					-
[4]		Vo	olur	ne	30,	1952

## Index to Subjects and Titles, Volume 30

A

AMA Assembler									*	D	rew	*			227
AMA Computer	*				*	*									289
AMA Printer											arsh				368
AMA Reader										K	uch			*	237
AMA Summarizer				*						Ri	ggs		ă.		321
AMA Timer											rda				122
AMA see also Automatic Message Accounting															
Abstracts and Comments															
Silver Anniversary							Ins	side	e ba	ick	cov	er,	Fel	bru	arv
The Vision of a Man Named Bell							Ins	side	e ba	ick	cov	er.	Ap	ril	
Accounting Center Machines												,	-1		
Basic Features of the AMA Center										M	087	ar			70
Accuracy Provisions in AMA															
Acoustical Terminology Standard	*		*				,		•	-	6	•		•	49
Air Force Officers				*				•	*						29
Air Raid Drill, Murray Hill			*									*			
	*	*			*		*	,	*						100
Air Raid Protection															380
Air Force Approves														•	200
Alarm Systems Sequence Signaling										n	,				101
Sequence Signaling									*	Be	iche	elet			464
C1. Alarm and Control Features of the TD-2									*	Pt	illis				477
Alloys															
Vibralloy-A New Ferromagnetic Alloy			0				0			F	ine		9	٠	345
American Association for the Advancement of Scientific Advancement of	ence	F	orn	ns a	N	ew	Se	ctic	m						
on Industrial Science Known as Section P .									*						79
American Chemical Society															
Jersey Chemists Meet in Newark															139
American Institute of Electrical Engineers															
American Institute of Electrical Engineers A.I.E.E. Representation at the Laboratories				:											445
Committee Roster															
Dr. Kock Lectures															487
Fall General Meeting															485
New York Section Elects Officers															445
Winter General Meeting															140
Winter General Meeting															409
American Legion								•	•	•				•	
Whippany Legion Post Sponsors Oratorical Co	nte	st													139
Whippany Post 329 Receives Its Charter from	Am	eri	ean	L	egic	'n		•		•		*		•	135
American Physical Society	2 8111	cin	can	-	gio	***			•						100
Columbus Meeting															100
Washington Meeting															
American Society for Quality Control Holds Meetin				*	*	*		*				*		*	310
American Society for Quanty Control Holds Meetin American Society for Testing Materials	ng						*							*	200
50th Anniversary Meeting															000
Amorina Charles Amorinia	*		٠		*				٠			*	*		233
American Standards Association															210
ASA Host to International Standards Organization	on	*			*	*							3		310
American Telephone and Telegraph Company															
Annual Report Excerpts					*				*			*			
Year's Progress Reviewed					*										87
Amplifiers, Traveling-Wave															
Craft Milling									*						417
Craft Milling										M	filln	nan			413
Anniversaries															
Twenty-five Years of Television Transmission															178
Volume 30, 1959															1 = 1

Announcing Systems		
Recorded Announcement of Toll Line Delays	Maloney.	. 365
Antennas		
Antennas for the TD-2		. 49
New Putty Keeps In Radio Waves		. 470
Armaments, U.S.A.F. Technical Advisory Group on		
Army Telephone Set, Laboratories Develops		. 183
Assembler, AMA	Drew	. 227
Atomic Energy Commission		
J. B. Fisk Appointed to A.E.C. Advisory Committee		. 446
Automatic Dial Pulse Recorder	Blount .	. 440
Automatic Message Accounting		
AMA Assembler	Drew	. 227
AMA Computer		. 289
AMA Printer		. 368
AMA Reader	Kuch	. 237
AMA Summarizer	Riggs	
AMA Timer	Jordan .	
Accuracy Provisions in AMA		
Basic Features of the AMA Center	Meszar .	
Bibliography of Bell Laboratories Record Articles to Date		
Central Office Equipment	Sheatsley	173
Centralized Automatic Message Accounting		252
Sorter for Automatic Message Accounting	Rolf	
m . m /	** . **	
Test Tapes for Automatic Accounting Centers  Test Unit for AMA Perforators and Readers		
Tracing Time Backward in AMA		
Automatic Switching of Long Distance Calls Starts in Dallas		
8 8		. 59
Awards and Citations		
Bardeen and Brattain to Receive Stuart Ballantine Medals of Franklin		250
Institute		. 358
Bell System Wins National Council's Highest Safety Award		. 486
Buckley, Oliver E., Solid State Physics Prize Established		
Burns, R. M., Receives Perkin Medal		. 74
Campbell, W. E., is President-Elect of the American Society of Lubrication		
Engineers		. 274
Craig, C. F., Awarded "Medal for the Advancement of Research" by		
American Society for Metals		. 444
Craig, C. F., Awarded LL.D. Degree by University of Missouri		. 309
Darrow, Dr., Honored by France with the Decoration of the Legion of		
Honor, Chevalier Rank		. 79
Degrees Awarded to BTL Members		. 344
Edwards, G. D., Receives the Shewhart Medal		. 308
Gray, Frank, Awarded the I.R.E.'s Vladimir K. Zworykin Television Prize		
Award		446
I.R.E. Fellow Awards for 1953		444
Jensen, A. G., Receives the Gold Medal of the Royal Technical University		
of Denmark		. 316
Jensen, A. G., Awarded the David Sarnoff Gold Medal		. 438
Kelly, M. J., Elected to American Philosophical Society		. 272
Kock, W. E., Honored by Award of Doctor of Science Degree by University of Cincinnati		. 310
Mason, D. R., in France under Fulbright Fellowship		. 487
Molina, E. C., Awarded the Elliott Cresson Medal		. 409
Molina, E. C., Honored by Newark College of Engineering		. 308
Townsend, J. R., Retained as Consultant to the Director of Defense		. 500
Mobilization		. 419
Trent, R. L., Honored by Eta Kappa Nu		
Watson, Edward F., Praised for Public Service		
watson, Edward F., Fraised for Fublic Service	* * * *	. 104

Basic Features of the AMA Center Batteries, Storage Power Plants for the TD-2 Radio Relay Systems										70 118
Bazaar, Women Pioneers Run a										29
Bell Laboratories Record										
The Record Expands Its Technical Coverage										216
Bell Symphony Orchestra										
Music Makes Their Leisure a Pleasure										136
Bell System to Try Aluminum Wire if Metal Can Be Obtained		•	*				•			69
Birth of the Loading Coil						Hill				263
Book Notices	٨	*			•	*****	•		0	200
Antennas-Theory and Practice, by Schelkunoff and Friis,	and	Ad	was	nce	d					
Antenna Theory, by Schelkunoff	aini	-10		ice						260
Electrons and Holes in Semiconductors, by Shockley			*					*		274
Bown, Ralph, Named Vice-President										76
Broadcast, Pick-Up Telephone		*	*	*	*		*	•		17
			*	*	*				•	14
Buckley, O. E.										307
Resigns as Chairman of the Science Advisory Committee .	*		*		*					
Retires	*			*	×			e.	*	3/4
Bus Card Campaign for New Laboratories Employees	*	*	*		*	* *	*	*		138
C										
CAMA see Centralized Automatic Message Accounting										
Cable Dance Damper										454
Cable Sheath Repairs						Sharr	ne.			161
Cable Transmission Characteristics for the N Carrier System						Vago	e			333
Cables			•	•	•			•		333
Coaxial										
Dallas-Houston Coaxial Placed in Service										99
New Cable in Southwest										
Orlando-Tampa Coaxial Cable		*			*				*	379
Faults and Fault Location	*	*		*					*	010
Finding Gas Leaks in Cable Sheaths						Bowk	T of T on			250
Repairs, Cable Sheath										
		*			*	Snarj	w		0	101
Sheaths and Sheath Losses						n	_			140
Line Insulation Testing	*	*		*	*	raue	r			449
Splicing										000
Spot Heat for Splicers							•			262
Submarine										
Key West-Havana Cable: Electrical Characteristics of										20
Terminals	•			0		Ilgen	,			20
Key West-Havana Cable: Regulated DC Power Supply			*	*	*	Mesz				217
Key West-Havana Cable: Repeater Components	*	*	*		*	Wood				
Key West-Havana Cable: The Power Plant						Spen				
Key West-Havana Cable: Transmission Aspects			×			Jacol				
Video Pair Cable, New Longitudinal Tape Shield for										
Camera, Multiple Exposure	*	*	*		*					234
Castings, Colossal (Magnesium)										380
Central Office Equipment for AMA		*				Shea	tsle	y		173
Centralized Automatic Message Accounting										
Channel Unit of the N1 Carrier				*		Haw	ks			381
Chief Engineers Visit Murray Hill										27
Civil Defense Drill										27
Civil Defense First Aid Program										193
Code Patterns in Telephone Switching and Accounting Syste	ems					Deh			0	9
Codes, 2-out-of-5										
Accuracy Provisions in AMA						King				471
									Ť	
Volume 30, 1952										171

Coils, Loading. Birth of the Loading Coil								Hill			. :	263
Coin Junctors												
Handling Coin Calls in No. 5 Crossbar												430
Colloquium (Deal-Holmdel) on Switching Research .												85
Communications Development Training Program								Ingr	am			404
Communications Development Training Program Recon	ivei	nes										403
Compandor												
Type-N Carrier Telephone System								Van	<b>Lass</b>	el		277
Computers, AMA												
AMA Computer												289
Tracing Time Backward in AMA								Joel				422
Conduit, Clay, Shock Testing of Vitrified												8
Conferences												
Conference on Quality Control												409
Joint Computer Conference												78
Laboratories Activities at the 1952 I.R.E. Convention	٠.					,						190
O.N.R. Conference on Magnetism									×			379
Physical Electronics Conference Held at M.I.T.												272
Contacts, Relay												
Research in a Saucepan												476
Counting Machines and Devices												
New Word Counter for Teletypewriter Circuits	. ,							A 1		,		210
Covers-1952												
Bombarding a Metal with Electrons											M	arch
New 1951 Laboratories Employee										. 1	anı	uarv
Setting Up Equipment in the Free-Space Room										Fe	br	nary
Springtime at Murray Hill											A	pril
(Individual cover designs discontinued after April)												
Craft Milling												417
Craig, Cleo F., Talks at the Laboratories												25
Cryostat, Collins Helium												
Extreme Cold Opens Way to New Knowledge												397
Crystals, Iron												
Magnetic Domains								Wil	liam	8		385
D												
N. H. W. C. LLOUI N. L. C												20
Dallas-Houston Coaxial Cable Placed in Service .			*				*	* .	*		*	29
Damper, Cable Dance see Vibration. Damping												270
Daylight. Sun in June								200	270		.:	270
Deal-Holmdel Colloquium			٠	2	6, 8	55,	202	, 233	, 272	, 34	11,	486
De Forest, Lee, "Father of Radio" To Be Honored						*						172
De Forest, Lee and William Shockley Discuss Electro	nic			•	*	•	*	* *		*		244
"Delay Quote" see Machines, Delay Quoting												211
Dial for 500-Type Telephone Set								Pre	scott			211
Dialing												410
Additional Direct Dialing				*			*					410
Demonstration of Nation-Wide Toll Dialing (Picture	e)						*			*	*	36
Direct Long Distance Dialing		. ,								*	*	3/9
Dials												211
Dial for 500-Type Telephone Set												
Historic Firsts: Lettered Dial				*			•					12
Dies												222
Handles for the 500-Type Telephone Set Are Die 1							0			*		222
Diplex Radio Telegraph for Caribbean Area					*		*					400
Dolls and Toys-1951 Program a Huge Success				×			*			*	*	40
Domain Patterns								***	11:			205
Magnetic Domains			L 11					WI	man	18		300
Dry as a Bone? Moisture Tester Developed by W. E.	Ca	mp	pell									105
										-		
[8]								V	olum	e 3	0,	1952

E1 Telephone Repeater	. Weller 56
Early Demonstration of Color Television	288
Education	
Communications Development Training Program	. Ingram 404
Out-of-Hour Courses at Whippany include "Problems in Radar System	ns
Design"	83
Turkish Telephone Men Visit Murray Hill	189
Election Reporting, TV and Radio	
TV and Radio Coverage of Election Day News	483
Electrochemical Society-Golden Anniversary Meeting	222
Electromagnetic Fields	
Spatial Harmonic Traveling-Wave Amplifier	. Millman 413
Electron Tubes, 715B	
Key West-Havana Cable: Regulated DC Power Supply	. Meszaros . 217
Electronic Components, Symposium on Progress in Quality	233
Electron Metallography	. Heidenreich 101
Electronic Microscopic Study of Sintering in Thermistor Flakes	285
Employees' Benefit Committee Annual Report—1951	185
Employment Leaflet for Recruiting High School Girls (Picture)	86
Engineering	
Laboratories Leaders Participate in the Centennial of Engineering	410
Engineers, Foreign, Visit the Laboratories	486
Eta Kappa Nu Honors R. L. Trent	140
Exhibits	
Riflemen Show Their Medals	198
Extreme Cold Opens the Way to New Knowledge	397
F	
"Father of Radio" (Dr. Lee De Forest) To Be Honored	172
** 11 1. ** 1 0 1	134
Fellowships, Frank B. Jewett	104
	. Williams . 385
Field Engineering Force	. Williams . 959
Laboratories People Away from Home-Field Engineering Force	127
Finding Gas Leaks in Cable Sheaths	Rowker 359
First Southern Radio-Relay Link	215
Fisk, J. B., Appointed a Member of the Science Advisory Committee	307
507A and 507B PBX	. Treptow 205
Fletcher, Harvey, Moves to Academic Position	411
Fluxmeter	
Recording Fluxmeter of High Accuracy and Sensitivity	. Cioffi 247
For Doing Two Things at Once	
Frank B. Jewett Fellowships	
"Frequency Frogging"	
Type-N Carrier Telephone System	. VanTassel . 277
Type it current receptione bystem it is it is it is it.	
G	
Gardening. Week-End Farmer	148
Gas Analysis	
Mass Spectrometer	. Hannay 64
н	
and the state of t	
Handling Coin Calls in No. 5 Crossbar	. Germanton . 430
Handset for the 500-Type Set	
Hearing, Signal Translation in	. Schott 2
Volume 30, 1952	[9]

High Speed Machine for Fatigue Studies . High Stability 100-KC Crystal Units for Free	quency	v St	and	larc	ls					*	Griffin .		459 433
Historic Firsts: Lettered Dial					*	*							12 203
nobby Activity increases at the Laboratori	es .		0	0			e	e	٠	0		٠	200
	I												
Illinois Bell Executives Visit the Laboratori	ies .												135
Improved Shadowgraph											Husta .		223
Improvements in Subscriber Line Testing .					,						Ritchie .	*	337
Improving the Service Life of Storage Batter	ries .				4						Achenbach		313
Institute of Radio Engineers J. W. McRae Elected President of I.R.E.						٠	٠	0		0		٠	483
Laboratories Activities at the 1952 I.R.E.	Conve	ntio	n	0							0 0 0 0		190
Insulation. Testing													4.40
Line Insulation Testing											Pauer .		449
International Electrochemical Commission E	lects F	laro	ld S	S. C	)sb	orn	e P	res	ide	nt		*	410
	J												
TECH A AND COMPANY													20=
JKT-An All-Purpose Station Wire		9	*	•	0	۰	٠	0	•	٠	Lawson .		295
	K												
Key West-Havana Cable													•
Electrical Characteristics of Repeaters and	d Tern	nina	Is								Ilgenfritz		20
Regulated DC Power Supply								0.5	٠	0	Meszaros		217
Repeater Components							*		*	×	Wooley .	٠	61
The Power Plant					*				*	*	Spencer .		166
Transmission Aspects		*	*		*		*	*	*		Jacobs .		115
	L												
Laboratories Develops Army Telephone Set													183
Laboratories Girl Broadcasts to Radio Free													30
Laboratories Hobbyists										0			94
Laboratories People Away from Home-Fiel	d Eng	ine	rin	or F	core	ne.						•	127
Leakage, Gas	d Ling	,inc		8	Oit							•	12.
Finding Gas Leaks in Cable Sheaths		,									Bowker .		359
Lecture Course, Joint A.I.E.EI.R.E.				٠	,					•			
Line Insulation Testing		•											
Loading Coil, Birth of the											Hill		-
Loads of Pull													
Long Lines Summary of 1951 TV Network	Grow	th											83
,													
	M												
Machines, Delay Quoting	141												
Recorded Announcement of Toll Line I	Delays										Maloney .		365
Machining Craft Milling				٠	٠	٠	٠	٠	٠	٠	,		417
Magazine, Plans for New					•								134
Magnetic Domains											Williams		000
Magnetic Materials													
Vibralloy - A New Ferromagnetic Alloy .	* *	*		*	*			*			Fine		345
Magnetic Recording (Tape)											ni .		440
Automatic Dial Pulse Recorder					۰		۰	•			Blount .		440
Magnetic Tape Editor				•					*		Cole		420
Magnets, Permanent													200
Loads of Pull			*	*			*	•	*	•			306
[ 10 ]											17.1	0	10-2
[ 10 ]											Volume 3	U,	1,952

Masking, Auditory									
Signal Translation in Hearing						ott			2
Mass Spectrometer			*		Ha	nnay			64
McRae, J. W., Elected President of I.R.E.	*		*						483
Metallography									
Electron Metallography	.0	0	6	9	Hei	denr	eich		101
High Speed Machine for Fatigue Studies	n	0	٠		Gon	m.	0	0	459
Optical Microscopy: An Adjunct to Engineering and Research					Fos	ter	*		253
Microfilm. The Record To Be Microfilmed		*		*		*	*		311
Microscopes and Microscopy									205
Electron Microscopic Study of Sintering in Thermistor Flakes									285
Optical Microscopy: An Adjunct to Engineering and Research									
Microwave Laboratory at Murray Hill (Picture)		*	*	*	* *	*	*		100
Moisture Tester		*		*			*		109
									105
Dry As a Bone?				*	, ,				206
Multiple Exposure Camera									
Murray Hill Air Raid Drill	*	×		*	* *	*	*		196
Multay Hill Air Baid Dilli		*	*						100
N									
National Bureau of Standards' Board of Visitors Has Named M	ı. J	. Ke	elly	a					
Member of the Board		*		*					446
National Electronics Conference Holds Meeting in Chicago .			*	*					445
National Safety Council									
Bell System Wins National Council's Highest Safety Award .									486
Naval Electronics Students				4					42
New General Purpose Relay						*	*		261
New Jersey Business Education Association Teachers and W	Vrit	ers	Vi	sit					
Murray Hill				100					200
New Long Distance Telephone Center Planned			1						36
New Longitudinal Tape Shield for Video Pair Cable	*		*		WI	idele	r		171
"New Look" in Pass Photos					1, 41		*		157
New Putty Keeps In Radio Waves							*	*	470
New Stepping Relay			*	*	Gar	vin	•	*	14
New TV Facilities Planned	*		*	*				۰	178
New Word Counter for Teletypewriter Circuits		*		*				۰	210
0									
· ·									
Old-Fashioned Virtues in the Telephone Business Today					Ree	28 .			84
Oliver E. Buckley Solid State Physics Prize Established								*	336
101-G Power Supply									18
108A Protector		*							
Optical Microscopy: An Adjunct to Engineering and Research .					Fos	ter			253
Organization Changes					. 2	6, 76	i, 18	35,	272
Osborne, H. S., A T & T Chief Engineer, Retires									353
Oscillations, Mechanical. Cable Dance Damper									454
Oscillographs. Improved Shadowgraph					Hu	sta		*	223
Out-of-Hour Lectures			_						
E. L. Getz on Nationwide Customer Dialing, Englewood, New									312
J. A. Morton on The Transistor-Three Years after Invention .	*			*			*		189
_									
, Р									
Pacific Company Aids in Snow Storm Rescues									146
"Packaged" Dial Office for Small Communities					O'F	Brien			106
Pass Photos, "New Look" in									187
					1.00				- 0
Volume 30, 1952								f	117

Patching and Monitoring Bays TD 2 Radio Switching and Monitoring Equipment	Wor	4		153
TD-2 Radio. Switching and Monitoring Equipment	WOF	и		133
W. E. Grants Transistor Licenses				. 343
Patents				
Bell System's Largest Patent			9	. 311
Patents Issued to Members of Bell Telephone Laboratories		276	29	8, 341
Personnel				
H. A. Affel to Korea				. 380
O. E. Buckley Resigns as Chairman of the Science Advisory Committee .				
O. E. Buckley Retires	* *			. 374
James Campbell Moves to Winston-Salem				. 189
J. B. Fisk Appointed a Member of the Science Advisory Committee				. 307
D. A. Quarles Named Sandia President		*		. 132
D. A. Quarles New A.I.E.E. President T. E. Shea Returns as Vice-President		*		. 409
J. R. Townsend Named Consultant on Materials Conservation	٠			. 132
Phi Beta Kappa Lecture Delivered by K. K. Darrow				. 236
Poles				. 230
Laboratories Receives a Long Lines Souvenir—a 6-Foot Section of a 60-Year				
Old Telephone Pole				. 188
Power Plant				
Key West-Havana Cable: Regulated DC Power Supply	Mes	zaro	8	. 217
Key West-Havana Cable: The Power Plant	Sper	icer		. 166
101-G Power Supply				. 18
Power Plants for the TD-2 Radio Relay Systems (Power Supply Units J86731A	Gay			. 118
Lists 1 & 2)				
Private Branch Exchanges, 507A and 507B	Trep	tow		. 205
Program Transmission				20
Laboratories Girl Broadcasts to Radio Free Asia				. 30
Protector, The 108-A				. 165
Pulsing, Multifrequency Transistors, Enter, Telephone, Service				420
Transistors Enter Telephone Service				439
Tutty, New, Reeps in hadio waves		٠	۰	. 410
Q				
Quarles, D. A., Named Sandia President; T. E. Shea Returns as Vice-President				132
t and the state of				
R				
Radar Bombing				
Out-of-Hour Lecture on Radar Bombing				. 235
Radio				
Circuits				
Additional Facilities for Trans-Pacific Terminal				. 487
Telephone Service for Carrizo Plain Area of California				. 252
Frequency				
Transmission beyond the Horizon at Frequencies between 40 and				
4000 MC			٠	. 245
Relay Stations				-
Creating a Microwave Relay Route (Picture)	* *			. 85
Relay Systems				
H. W. Evans Spoke on the Transcontinental Radio Relay System,				200
March 12			•	. 200
New Putty Keeps In Radio Waves			•	470
Radio Relay Activities			•	446
Radio Relay Route Planned for Middle West				443
The state of the s				

Radio (continued)				
TD-2				
Alarm and Control Features of the TD-2			Pullis .	. 477
Antennas for the TD-2			Lince	
Power Plants for the TD-2 Radio Relay Systems			Gay	
Radio Relay Stations of the TD-2	0		Tierney .	. 327
Sequence Signaling	6		Bachelet .	
TD-2 Radio Relay System Expanded in the Southwest				. 201
TD-2 Radio. Switching and Monitoring Equipment			Word .	. 153
Sets, AN/ARC-1. Navy Praises Labs Radio Set				. 236
Stations. Emergency Radio Station for Scotch Plains				. 191
Systems Microwave				
First Southern Radio Relay Link			0.000	. 215
Future Microwave Route				344
Transmission				
Transmission beyond the Horizon at Frequencies between	40	and		
17ansmission beyond the Horizon at Frequencies between	***	and		945
4000 MC	*	* *		443
Radio Relay Route Planned for Middle West			Times	997
Radio Relay Stations of the TD-2			Tierney .	. 327
	ill.			. 222
Radiotelephone				
On Trains				
Telephone Service for Train Passengers				. 269
Service				
Overseas Service to Lebanon		× ×		. 446
Mobile Telephone Service in Canada				. 446
Mobile Telephone Service in Oil Exploration Areas				. 487
More Overseas Service				. 358
S.S. United States				. 379
Reader, AMA				. 237
Record Expands Its Technical Coverage				. 216
Recorded Announcement of Toll Line Delays				
Recorders, Trouble			materieg.	. 300
Automatic Dial Pulse Recorder			Blount	. 440
Recording Fluxmeter of High Accuracy and Sensitivity			Cioff.	
Recovery and Repair of Telephone Apparatus			Paunalda.	. 247
		0 9	Reynolds	. 400
Reflectors				000
Spot Heat for Splicers				. 262
Regulators				215
Key West-Havana Cable: Regulated DC Power Supply	*		Meszaros	. 217
Relays				
New General Purpose Relay				. 261
New Stepping Relay			Garvin .	. 14
Research in a Saucepan				. 476
Story about the Christmas Tree-and the Telephone Relay				. 484
Repeaters				
E1 Telephone Repeater			Weller .	. 56
Key West-Havana Cable: Electrical Characteristics of Repeat	ers	and		
Terminals			72 / 1.	. 20
Key West-Havana Cable: Repeater Components				. 61
Resistance Measurements			concy	
Improvements in Subscriber Line Testing			Ritchie .	. 337
D	•			
nespiration, Artificial. New Method of				. 00
C				
S				
C. There do The Dovelopment of Standards			Millard .	110
Screw Threads: The Development of Standards				
Sequence Signaling				-
Shadowgraph, Improved			. Husta .	. 223
Volume 30, 1952				[ 13 ]

Shea, T. E., Returns as Vice-President										
New Longitudinal Tape Shield for Video Pair Cable										
Shock Testing of Vitrified Clay Conduit										
Signal Translation in Hearing	*		*	*	*			Schott .	6	2
Silica	. 121	1-1								00=
Electron Microscopic Study of Sintering in Thermistor "Skywatch"	r	lake	.5		•				*	265
Air Force Approves Operation "Skywatch"										380
Soldering, Torch					*					300
Cable Sheath Repairs								Sharpe .		181
Solid Sound								Kersta .		
Solid State Physics Prize see Oliver E. Buckley Solid	St	ate	Ph	vei		Pri	76	Rerott .	0	004
Sorter for Automatic Message Accounting	50	are		7 34				Rolf		299
Sound, Visible					*	•	•		•	200
Solid Sound								Kersta .		354
Sound Waves									•	001
Signal Translation in Hearing								Schott .		2
Spatial Harmonic Traveling-Wave Amplifier				1				Millman .		
Spectrometers and Spectrometry			•	-						
Mass Spectrometer								Hannay .		64
Speech Analysis							•		•	-
Magnetic Tape Editor								Cole		420
Spot Heat for Splicers										262
Stamps-From Stamp Collector to Expert					a					200
Standards										
Conference on Standards							4			310
Screw Threads: The Development of Standards .								Millard .		110
Standards Organization										
Staplers										
JKT-An All-Purpose Station Wire								Lawson .		295
Stock Transfer Bankers										29
Storage Batteries										
Improving the Service Life of Storage Batteries							4"	Achenbach		313
Storms. Pacific Company Aids in Snow Storm Rescues		0					4			146
Summarizer, AMA										321
Sun in June				٠						270
Switching										
Automatic Switching of Long Distance Calls Starts in	ı D	alla	18		*	*	*			39
T										
mp n to n 1 Co. E. 1 11 d Code of										201
TD-Radio Relay System Expanded in the Southwest TD-2 Radio. Switching and Monitoring Equipment	0	٠					0	Word	٠	150
	×		*					wora .	•	199
TD-2 see also Radio Relay Systems, TD-2 TV and Radio Coverage of Election Day News										483
Tape Perforators			*				,		*	400
Accuracy Provisions in AMA								Vina		471
Test Unit for AMA Perforators and Readers	*	*		*				Bonorden		
Tape Printers. AMA Printer					*			Marshall .		368
Tape Readers								mursman.	0	000
Test Tapes for Automatic Accounting Centers								Kille		349
								Bonorden		
Tape Recorders								Donortien		000
Accuracy Provisions in Automatic Message Accounting	ισ							King		471
Technical Societies Council of N. Y	0							King		
Telephone Accounting				7						
Code Patterns in Telephone Switching and Accounting	ng	Sys	ten	ıs				Dehn		9
Telephone Accounting see also Automatic Message	Acc	cour	ntin	g						
				0						

Telephone												
Apparatus								_				
Recovery and Repair of Telephone Apparatus .								Reg	jnold	ls		456
Scientific Rehabilitation of Equipment							*			*		311
- M								Ma	rshal	II.		368
Construction												
New Long Distance Telephone Center Planned .												36
1953 Toll Construction Program	1											469
	*	*	*		*		*					.00
History								Hil	1			263
Birth of the Loading Coil	*	*	*					mu		*		200
Materials												207
Extreme Cold Opens Way to New Knowledge .	*		*	*		*		*		*		397
Plant												-
Nossaman Describes Outside Plant Development			*									316
Service												
TV and Radio Coverage of Election Day News .												483
Sets												
53-Type. For Doing Two Things at Once												482
				,								17
331-A. Broadcast Pick-up Telephone	×	*					*			*	*	1.
500-Type.												211
Dial for 500-Type Telephone Set		*	*	*	*	*	*	Pre	scott			211
Handset for the 500-Type Set								Col	ob.			317
Portable. Laboratories Develops Army Telephone Se	et		*				*			*		183
Statistics. Bell System Gains						*						487
Systems												
Carrier												
Type N												
Cable Transmission Characteristics for the N C	ar	rior	Sv	ste	m			Va	age			333
Type-N Carrier Telephone System	en:	iei	3,	sec	***		*	Va	n Tae			
Type-N Carrier Telephone System			*	4	*							
Type N1. Channel Unit of the N1 Carrier	*	*		*	*	*	*	ria	wks			301
Туре О												100
Open Wire to Carry More Voices		*		*			*					138
Type-O Carrier System Goes into Service				*			*					252
Dial												
Crossbar No. 5.												
Automatic Dial Pulse Recorder						1		Blo	unt			440
Handling Coin Calls in No. 5 Crossbar						1		Ger	rman	iton		430
Step-by-Step No. 356A. "Packaged" Dial Office for	Sr	nal	Co	mı	niii	niti	PE	01	Rrien			106
Traffic				*****								100
												343
Telephone Traffic Studies during Political Convention	115	*		*	×			0				040
Telephone Pioneers of America												100
Life Members' Club Songfest												138
News of the New Jersey Council						*				*	*	141
Old-Fashioned Virtues in the Telephone Business Toda	iy							Rec	es .			84
Women's Committee Holds George Washington Par	tv											197
Telephone Service for Carrizo Plain Area of California	2											252
Telephone Service for Train Passengers												269
Teletypewriters. New Word Counter for Teletypewriter												
	CII	cu	113								*	210
Television						*						
Networks												
New TV Facilities Planned				*			*					178
Special TV Channels for Convention Coverage .		*										344
TV Network (Station KFEL-TV)		*1										379
Progress		1							*			
Twenty-Five Years of Television Transmission .												178
Systems												
Early Demonstration of Color Television												000
Transmission	*		*	*		*	*		* *	*	*	200
								***				1 70
TD-2 Radio. Switching and Monitoring Equipment								W	)rd	*		153
Volume 30, 1952											[	15]
											-	-

Terminals		,			
Key West-Havana Cable: Electrical Characteristics of Repeaters					
Terminals			llgenfritz		20
Terminology					
Acoustical Terminology Standard				٠	42
Test Boards, No. 14					00=
Improvements in Subscriber Line Testing			Ritchie .		337
Test Tapes for Automatic Accounting Centers			Kille		349
Test Unit for AMA Perforators and Readers			Bonorden		398
Testing					
High Speed Machine for Fatigue Studies		*	Gohn		459
Shock Testing of Vitrified Clay Conduit Machines					8
Thermistor Flakes					
Electron Microscopic Study of Sintering in Thermistor Flakes	*				285
Timer, AMA			Jordan .		122
Tracing Time Backward in AMA	*		Joel		422
Training Program Reconvenes					403
Transistors					
Teachers Taught about Transistors	*				342
Transistors Enter Telephone Service					439
Transmission					
Cable Transmission Characteristics for the N Carrier System					333
Improvements in Subscriber Line Testing			Ritchie .		337
Key West-Havana Cable: Transmission Aspects		9	Jacobs .		115
Transmission Beyond the Horizon at Frequencies between 40 and 400	0 M	C			245
Turkish Telephone Men Visit Murray Hill					189
Twas the Day before Christmas-(Series of Pictures)					90
Twenty-Five Years of Television Transmission					178
Type-N Carrier Telephone System					
Type-O Carrier System Goes into Service					252
XI					
U					
U.S.A.F. Technical Advisory Group on Armaments		*			358
V					
Vibralloy-A New Ferromagnetic Alloy			Fine		345
Vibration. Damping					
Cable Dance Damper					454
Vibrations, Audio Frequency		•		•	
Signal Translation in Hearing			Schott .		2
organi Transactor in Tearing		•	Deriott 1	•	-
w					
<b>*</b>					
West Street Women's Bowling Club					199
Western Electric Distributing Houses				-	
Recovery and Repair of Telephone Apparatus			Reynolds		456
Wire		•	-tegnonia		
Aluminum					
Bell System to Try Aluminum Wire If Metal Can Be Obtained					69
Station					00
IKT-An All-Purpose Station Wire		-	Lawson .		295